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EXAMINER	
MCDERMOTT, KEVIN	

ART UNIT	PAPER NUMBER
3635	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/973,844	DEFORD ET AL.	
	Examiner	Art Unit	
	Kevin McDermott	3635	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *55-57 and 59-85* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *81* is/are allowed.

6)☒ Claim(s) *55,57,59-80 and 82-85* is/are rejected.

7)☒ Claim(s) *56* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 55 and 59 are rejected under 35 U.S.C. 102(b) as being anticipated by King.

King discloses in figure 1 and in column 2, lines 42-58, a generally lightweight fiber reinforced block 10. Block 10 is a fiber reinforced cellular concrete block that exhibits virtually all the beneficial properties of a typical concrete material, but with greatly increased strength and reduced weight.

Block 10 includes normal weight concrete factions 14 and lightweight factions 16 bonded to the normal factions 14. The normal weight factions 14 have a typical gas or air content of approximately 2% while the lightweight portions have approximately 25-40% gas entrained therein. The reinforcing fibers are polypropylene fibers, carbon fibers, or other suitable fibrous material.

Column 4, lines 5-12, disclose the fractions being made from essentially the same material so that they may be simultaneously cast and cured together as an integral product. The bonding is facilitated by the fibers 22 at the interface, which extend between the different fractions.

The lightweight fractions 16 are the claimed second component, and the normal weight fractions 14 are the claimed first component. The fractions 14, 16 are adjacent each other. The fibers 22 extend between the fractions 14, 16 so that a mechanical bond is formed. This includes fibers 22 extending from fraction 16 into fraction 14. Additionally, since the fractions 14, 16 may be simultaneously cast as an integral product a chemical bond inherently develops between the two concrete fractions 14, 16.

King also discloses in column 3, lines 18-20, the lightweight concrete material ranging from 26-80 lbs per cubic foot, which falls within the claimed range of 53-115lbs/cubic foot.

Regarding claim 59, the fraction 16 is less dense than the fraction 14.

Because King discloses all the structural limitations of claims 55 and 59, it is inherently capable of performing the same functions or being used in the same way as the claimed invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 57 is rejected under 35 U.S.C. 103(a) as being unpatentable over King.

King's disclosure is discussed above. However, King does not disclose the particular thickness of the fraction 14.

It would nave been obvious to one of ordinary skill in the art at the time the invention was made to make the thin cement layers 3 less than about 3/16", since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

One of ordinary skill would have been motivated to make such a modification to make the concrete fraction 14 much stronger and lighter than standard concrete.

Claims 60 and 80 are rejected under 35 U.S.C. 103(a) as being unpatentable over King in view of Freed.

King's disclosure is discussed above. However, King does not disclose the fraction 14 comprising about 5-12% wt. % fiber.

Freed discloses in column 5, lines 8-20, concrete fiber reinforcing in excess of 5% by weight.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the concrete mixture of fraction 14 by disposing therein 5-12% by weight of fiber reinforcing.

One of ordinary skill would be motivated to make such a modification to increase post-peak flexural performance of the concrete mixture.

Regarding claim 80, it is a use claim. There are no additional structural limitations recited to differentiate it from claim 60.

It would have been an obvious design choice to make any construction product from the components recited in claim 60, including a trim board, because the Applicant

has not disclosed that a trim board solves any stated problem or is for any particular purpose.

One of ordinary skill would have been motivated to make such a modification to make trim more durable.

Regarding claim 61, King discloses the lightweight component 16 being made from concrete - which is a curable material.

Regarding claim 62, King discloses the fibers 22 extending between the fractions 14, 16 so that a mechanical bond is formed. This includes fibers 22 extending from fraction 16 into fraction 14. Additionally, since the fractions 14, 16 may be simultaneously cast as an integral product a chemical bond inherently develops between the two concrete fractions 14, 16.

Regarding claim 63, King discloses the fibers 22 extending between the fractions 14, 16 so that a mechanical bond is formed. This means the fibers extend into the neighboring layer's capillary network so as to reduce the permeability of the pre-formed fiber cement layer.

Regarding claim 64, the fraction 16 is reinforced with fibers 22.

Regarding claim 65, the fraction 14 at least partially surrounds fraction 16.

Regarding claim 69, polypropylene and carbon fibers are synthetic fibers.

Regarding claim 70, the concrete of fraction 16 is a fire resistive material.

Regarding claim 71, the claim is considered a process step used in manufacturing the construction component and is not relevant to patentability of the building material as claimed. Even though product-by-process claims are limited by and

defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.

Regarding claim 74, the fraction 16 is a lightweight core having a first and second side, and the fraction 14 is on the first side of fraction 16.

Regarding claim 77, the fraction 16 is solid.

Claims 60 and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jungbluth in view of Freed and further in view of Miller.

Jungbluth is directed towards a fire resistant gate.

Jungbluth discloses in figure 1 and in column 1, line 56 to column 2, line 58, a corrugated sheet of steel 1 with insulating layers 2 on both sides thereof, and the outer sides of the insulating layers 2 being provided with fiber reinforced thin cement layers 3 such as thin glass mat reinforced cement layers. The insulating layers 2 comprise cement-bonded expanded perlite with a density of only 0.4 to 0.5 ton/m^3. A still lower density of 0.25 to 0.3 ton/m^3 can be obtained by adding polyurethane in a small amount not more than 10% by weight. The insulating layer 2 is the claimed second component and one of the two fiber reinforced thin cement layers 3 is the first component.

However, Jungbluth does not disclose making the cement layers 3 from about 5-12 wt. % fiber reinforcing, and disposing a third component disposed adjacent the first

component so that the first component is disposed between the third and second components.

Freed discloses in column 5, lines 8-20, concrete fiber reinforcing in excess of 5% by weight.

Miller discloses in figure 4 a fastener 10 installed in a support structure 99. The fastener 10 is a component and the support structure is made from two layers, each layer also being a component. The exterior layer is the first component and the interior layer is the second component. Consequently, the first component is disposed between the second and third components.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the cement layers 3 from about 5-12 wt. % fiber reinforcing, and to dispose the fastener of Miller on the gate of Jungbluth so that the first thin cement layer 3 was disposed between the fastener and the insulative layer 2.

One of ordinary skill would have made such a modification to increase post-peak flexural performance of the concrete mixture, and so that signs could be hung on the gate.

Claims 60, 67 and 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weaver in view of Freed and further in view of Schupak.

Weaver discloses in figure 2 a planer wall panel 30 having a solid portion which includes spaced vertical studs 32 extending between a top beam 34 and a base beam 36. Insulation panels 40 extend between the vertical studs 32 and the outside face of the wall has a solid planar concrete surface 42.

The wall including the beams 34, 36 and surface 42 is the first component, and the insulation panels 40 are the second component. The first component at least partially surrounds and is bonded to the second component.

However, Weaver does not disclose the beams 34, 36 and the solid planar concrete surface 42 including fiber reinforcing of about 5-12 wt %.

Freed discloses in column 5, lines 8-20, reinforcing concrete with fiber in excess of 5% by weight.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to reinforce the concrete beams and wall of Weaver with 5-12 wt. % fibers.

One of ordinary skill would have made such a modification so the concrete would be able to withstand heavier loads and to increase post-peak flexural performance of the concrete mixture.

However, neither Weaver nor Freed specifically disclose the fibers having a planar orientation or orienting the fibers in the direction of loading.

Schupack discloses in figure 1 and in column 4, line 4 to column 5, line 60, a panel structure 10 having a cementitious core 12 reinforced at both of its faces by an elastic, woven, fabric layer 14. The fabric layer 14 has a substantially planar orientation being oriented in a plane parallel to a major plane of the core 12, and the fiber that make up the fabric layer 14 is inherently oriented in the direction of loading. The loading in this case is tensile loading, not a load applied perpendicular to a major surface of the panel 10.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to orient the fibers of Freed in the structure of Weaver so that the fibers have a planar orientation and are parallel to a major surface of the Weaver structure.

One of ordinary skill would have made such a modification so the concrete would be able to withstand heavier loads.

Claims 60 and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sheber in view of Freed.

Sheber discloses in figure 8 and in column 4, lines 20-34, a concrete panel 70 having a pattern embossed thereon. The concrete panel is disposed within mold 3. The concrete panel 70 is the claimed first component and the mold 3 is the claimed second component, and they are bonded to each other during embossing.

However, Sheber does not disclose including fiber reinforcing of about 5-12 wt %.

Freed discloses in column 5, lines 8-20, reinforcing concrete with fiber in excess of 5% by weight.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to reinforce the concrete panel 70 of Sheber with 5-12 wt. % fibers.

One of ordinary skill would have made such a modification so the concrete would be able to withstand heavier loads and to increase post-peak flexural performance of the concrete mixture.

Claims 60 and 73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Perkins in view of Freed.

Perkins discloses in figures 3 and 4 and in column 5, lines 40-50, masonry blocks 12 having a decorative facing 14 disposed thereon. The masonry blocks 12 are made from concrete. Column 8, lines 8-16, discloses securing the facing 14 to the block 12 using an adhesive 53 disposed between the block 12 and facing 14. The concrete block 12 is the claimed first component, the decorative facing 14 is the claimed second component, and the adhesive is the claimed sub-layer disposed between the first and second components to improve bonding therebetween.

However, Perkins does not disclose including fiber reinforcing of about 5-12 wt %.

Freed discloses in column 5, lines 8-20, reinforcing concrete with fiber in excess of 5% by weight.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to reinforce the concrete block 12 of Perkins with 5-12 wt. % fibers.

One of ordinary skill would have made such a modification so the concrete would be able to withstand heavier loads and to increase post-peak flexural performance of the concrete mixture.

Claims 60, 74-76, and 79 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weaver in view of Freed.

Weaver discloses in figure 2 a planer wall panel 30 having a solid portion which includes spaced vertical studs 32 extending between a top beam 34 and a base beam 36. Insulation panels 40 extend between the vertical studs 32 and the outside face of the wall has a solid planar concrete surface 42.

The wall including the beams 34, 36 and surface 42 is the first component, and the insulation panels 40 are the second component. The first component at least partially surrounds and is bonded to the second component. The insulation panels 40 have top and bottom sides, and are lightweight relative to the concrete beams 34, 36 and surface 42. The top and bottom sides correspond to the claimed first and second sides. Additionally, the concrete forming the beams 34, 36 wraps around the top and bottom sides of the insulation panels 40. As shown in figure 2, the insulation panels 40 open to the outside of the panel. Finally, the wall panels 30 are each planks.

However, Weaver does not disclose the beams 34, 36 and the solid planar concrete surface 42 including fiber reinforcing of about 5-12 wt %.

Freed discloses in column 5, lines 8-20, reinforcing concrete with fiber in excess of 5% by weight.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to reinforce the concrete beams and wall of Weaver with 5-12 wt. % fibers.

One of ordinary skill would have made such a modification so the concrete would be able to withstand heavier loads and to increase post-peak flexural performance of the concrete mixture.

Claim 78 is rejected under 35 U.S.C. 103(a) as being unpatentable over Weaver in view of Freed and further in view of Anderson.

The disclosures of Weaver and Freed are discussed above.

However, neither Weaver nor Freed disclose making the insulation of Weaver a honeycombed configuration.

Anderson discloses a honeycomb core disposed between two exterior components 220 and 240.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute a honeycomb-shaped insulation layer in Weaver for insulation layer 40.

One of ordinary skill would have made such a modification to increase the insulation characteristics of the panel.

Claims 82-84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Selby in view of Freed.

Selby discloses in figure 2 and in column 2, lines 12-16 and lines 35-41, blocks 6 composed of an outer concrete member 8 and an inner concrete member 9, both being separated from each other by an inner insulation insert 10.

The outer, or first concrete member 8 has its inner surfaces 16, 17, and 18 moulded to fit the adjacent surfaces of the members 11, 12, and 13 of the insulation insert 10, while the inner surfaces 19, 20, and 21 of the inner, or second, concrete member 9 are moulded to fit the adjacent surfaces of the members 11, 12, and 13 of the insulation insert 10.

The members 8 and 9 are the claimed first and second components, respectively. The keyed portion of member 9 extends into the member 8 to form mechanical bonding with member 8, and the member 8 does not extend into the member 9. Both members 8 and 9 are made from concrete – which is a curable material. Additionally, the density of the member 9 is less than the member 10 because member 9 has a hole 25 disposed therein.

However, Selby does not disclose reinforcing the members 8 and 9 with fiber.

Freed discloses in column 5, lines 8-20, reinforcing concrete with fiber.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to reinforce member 8 with fiber.

One of ordinary skill would have made such a modification so the concrete would be able to withstand heavier loads.

Claim 85 is rejected under 35 U.S.C. 103(a) as being unpatentable over Selby in view of Keshmiri and further in view of Freed.

Selby's disclosure is discussed above. However, Selby does not disclose reinforcing member 8 with about 5-12 wt. % cellulose fibers.

Keshmiri discloses in figure 6 and in paragraph 89, lines 1-3, blocks 212, 214, and 216 being made from high-performance fiber-reinforced concrete material.

Freed discloses in column 5, lines 8-20, reinforcing concrete with fiber in excess of 5% by weight.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to reinforce the members 8 with 5-12 wt. % cellulose fibers.

One of ordinary skill would have made such a modification so the concrete would be able to withstand heavier loads and to increase post-peak flexural performance of the concrete mixture.

Response to Arguments

Applicant's arguments with respect to claims 55, 57, and 59-85 have been considered but are moot in view of the new ground(s) of rejection.

Applicant argues that the density of the claimed invention is much greater than the core of the concrete block disclosed in King, thus giving the claimed invention significantly higher tensile and compressive strengths than King. Examiner disagrees.

As explained above, King's density falls within the claimed range. Because King discloses all the limitations of claim 55, it is inherently capable of performing the same functions or of being used in the same fashion.

Examiner suggests that Applicant consult MPEP section 2144.05, Overlap of ranges, when responding to this office action.

Allowable Subject Matter

Claim 81 is allowable.

Regarding claim 56, the prior art does not disclose, and it does not appear obvious to modify the prior art to disclose, a building material having the limitations of claim 55, wherein a first building component is reinforced with cellulose fibers that have

had at least a substantial portion of the lignin components removed from the fiber cell walls.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Kevin McDermott, whose telephone number is 703-308-8266.

Carl D. Friedman
Supervisory Patent Examiner
Group 3600

KM 2/2/04

KM